Johnson

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Electronics Technician
Examination
Tranformers

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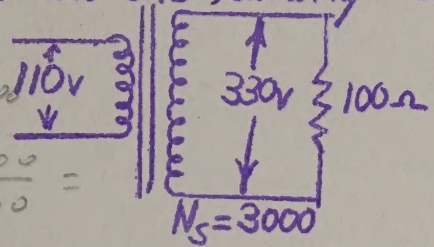
① A transformer has the following Conditions:



$\frac{E_P}{E_S} = \frac{N_P}{N_S} = \frac{110}{330} = \frac{N_P}{3000}$

$\frac{I_P}{I_S} = \frac{N_S}{N_P} = \frac{I_P}{3.3} = \frac{3000}{1000} =$

$I_P = 9.9 \times 110 = 1089\,w$

$I_S = 3.3^2 \times 100 = 1089,$

Assuming no iron or copper losses

N_p = ? 1000
I_S = ? 3.3 A
P_p = ? 1089 w.
P_s = ? 1089 w.

② Give the relation between impedance and turns of a transformer in equation form $\frac{Z_P}{Z_S} = \left(\frac{N_P}{N_S}\right)^2$ or $\frac{N_P}{N_S} = \sqrt{\frac{Z_P}{Z_S}}$

③ A source of Emf with an impedance of 1000Ω is to supply power to a load of 10Ω by the use of a transformer.

a. What is the turns ratio? $\sqrt{\frac{Z_P}{Z_S}} = \sqrt{\frac{1000}{10}} = 10$ $\frac{N_P}{N_S} = \frac{10}{1}$

b. IF the Emf is 100 volts what is the current and voltage in the secondary? $\frac{N_P}{N_P} = \frac{E_P}{E_S} = \frac{10}{1} = \frac{100}{1} =$ 10 V E_S

$I_S = \frac{E_S}{R} = \frac{10}{10} =$ 1 AMP

④ If a tranformer has 20,000 more tunns in the secondary than the primary and a .01 mfd capacitor across the secondary at 60∼ what is the reactance or practical impedance of the primary? $X_C = \frac{1}{2\pi FC} = (376.8 \times 10^{?})$

$\frac{Z_P}{376.8 \times 10^{?}} = \left(\frac{1}{20,000}\right)^2 =$ 94.2Ω

⑤ In a transformer with 100% eff., what is the angle between voltage and current in the secondary or the primary?

ZERO Θ